

6.1

1. Use a model to solve each equation.

Verify the solution.

a) $4x = -36$ b) $-7x = 63$
c) $4x + 7 = 19$ d) $-3x + 5 = 17$

2. Alice has some granola bars in her backpack. If she triples the number of granola bars then adds 4, she will get 13. How many granola bars does Alice have?

- a) Choose a variable. Write an equation for this situation.
b) Use a model to solve the equation.
c) Verify the solution.
Show how you did this.

6.2

3. Solve each equation.

Verify the solution.

a) $4x + 9 = -27$ b) $-5x + 8 = 23$
c) $3x - 4 = -3$ d) $10 = 6x + 5$

4. The school's sports teams held a banquet. The teams were charged \$125 for the rental of the hall, plus \$12 for each meal served. The total bill was \$545. How many people attended the banquet?

- a) Write an equation you could use to solve the problem.
b) Solve the equation. Verify the solution.

5. Solve each equation.

Verify the solution.

a) $\frac{n}{4} = -8$ b) $\frac{m}{3} - 2 = 3$
c) $\frac{b}{-3} = 6$ d) $\frac{f}{-8} + 8 = 12$

6. For each sentence, write an equation. Solve the equation to find the number.

- a) A number divided by -7 is 4.
b) A number divided by -9 is -3 .
c) Add 5 to a number divided by -2 and the sum is 0.

6.4

7. Draw a rectangle to show that:

$$6(3 + a) = 18 + 6a$$

8. Expand.

a) $3(x + 11)$ b) $5(12 + y)$
c) $-7(a - 4)$ d) $-12(-t + 6)$

6.5

9. Use the distributive property to solve each equation. Verify the solution.

a) $3(x + 2) = 21$ b) $4(p - 3) = 16$
c) $-5(r + 4) = -15$ d) $6(-s - 3) = 24$

10. Jon is playing a game. He starts with some points. On his first turn, Jon wins 6 points. On his second turn, Jon's points are doubled. He then has 26 points. How many points did Jon start with?

- a) Write an equation to model this problem.
b) Solve the equation.
Verify the solution.

3. a) $4x + 9 - 9 = -27 - 9 \Rightarrow 4x = -36 \Rightarrow \frac{4x}{4} = \frac{-36}{4} \Rightarrow x = -9$

b) $-5x + 8 - 8 = 23 - 8 \Rightarrow -5x = 15 \Rightarrow \frac{-5x}{-5} = \frac{15}{-5} \Rightarrow x = -3$

c) $3x - 4 + 4 = -3 + 4 \Rightarrow 3x = 1 \Rightarrow \frac{3x}{3} = \frac{1}{3} \Rightarrow x = \frac{1}{3}$

d) $10 - 5 = 6x + 5 - 5 \Rightarrow 5 = 6x \Rightarrow \frac{5}{6} = \frac{6x}{6} \Rightarrow \frac{5}{6} = x$

4. a) Let p represent the number of people who attended the banquet.

b) $125 + 12p = 545 \Rightarrow 125 - 125 + 12p = 545 - 125 \Rightarrow 12p = 420 \Rightarrow \frac{12p}{12} = \frac{420}{12} \Rightarrow p = 35$

5. a) $\frac{n}{4} = -8 \Rightarrow 4 \times \frac{n}{4} = -8 \times 4 \Rightarrow n = -32$

b) $\frac{m}{3} - 2 + 2 = 3 + 2 \Rightarrow \frac{m}{3} = 5 \Rightarrow 3 \times \frac{m}{3} = 5 \times 3 \Rightarrow m = 15$

c) $\frac{b}{-3} = 6 \Rightarrow (-3)\left(\frac{b}{-3}\right) = -3 \times 6 \Rightarrow b = -18$

d) $\frac{f}{-8} + 8 - 8 = 12 - 8 \Rightarrow \frac{f}{-8} = 4 \Rightarrow (-8)\left(\frac{f}{-8}\right) = 4(-8) \Rightarrow f = -32$

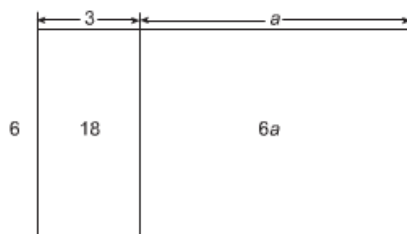
6. Let n represent the number.

a) $\frac{n}{-7} = 4 \Rightarrow (-7)\left(\frac{n}{-7}\right) = (4)(-7) \Rightarrow n = -28$

b) $\frac{n}{-9} = -3 \Rightarrow (-9)\left(\frac{n}{-9}\right) = (-3)(-9) \Rightarrow n = 27$

c) $\frac{n}{-2} + 5 = 0 \Rightarrow \frac{n}{-2} + 5 - 5 = 0 - 5 \Rightarrow \frac{n}{-2} = -5 \Rightarrow (-2)\left(\frac{n}{-2}\right) = (-5)(-2) \Rightarrow n = 10$

7.



9. a) $3(x + 2) = 21 \Rightarrow 3x + 6 = 21 \Rightarrow 3x + 6 - 6 = 21 - 6 \Rightarrow 3x = 15 \Rightarrow x = 5$

b) $4(p - 3) = 16 \Rightarrow 4p - 12 = 16 \Rightarrow 4p - 12 + 12 = 16 + 12 \Rightarrow 4p = 28 \Rightarrow p = 7$

c) $-5(r + 4) = -15 \Rightarrow -5r - 20 = -15 \Rightarrow -5r - 20 + 20 = -15 + 20 \Rightarrow -5r = 5 \Rightarrow r = -1$

d) $6(-s - 3) = 24 \Rightarrow -6s - 18 = 24 \Rightarrow -6s - 18 + 18 = 24 + 18 \Rightarrow -6s = 42 \Rightarrow s = -7$

10. a) Let p represent the number of points Jon started with.

b) $2(p + 6) = 26 \Rightarrow 2p + 12 = 26 \Rightarrow 2p + 12 - 12 = 26 - 12 \Rightarrow 2p = 14 \Rightarrow p = 7$

Left side = $2(7 + 6) = 2(13) = 26$

Right side = 26

Since the left side equals the right side, the solution is correct.